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## Appendix C

### Approved Workplan

# **FINAL REMEDIAL ACTION WORK PLAN**

## **BNSF LIBBY RAILYARD HYDRATED BIOTITE REMOVAL LIBBY, MONTANA**

**EMR PROJECT 5539.002-1**

*Prepared for:*

**The Burlington Northern Santa Fe Railway Company**

139 North Last Chance Gulch  
Helena, Montana 59601

*Prepared by:*

**ENVIRONMENTAL MANAGEMENT RESOURCES, INC.**

2509 152nd Ave. NE, Suite E  
Redmond, Washington 98052

**OCTOBER 2002**



**ENVIRONMENTAL MANAGEMENT RESOURCES**

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## **EXECUTIVE SUMMARY**

This Work Plan is intended to detail the Scope of Work for a planned Final Remedial Action (FRA) at the Libby, Montana Railyard, herein referred to as the Site. The objective of this FRA is to remove visible hydrated biotite from the surface of the Site that was mapped in October 2001.

The FRA will consist of stripping visible hydrated biotite from the surface along with the top one to two inches of soil. Following the FRA, soils samples will be collected to evaluate whether visible hydrated biotite are present. The material will be removed with a vacuum truck equipped with a High Efficiency Particulate Air (HEPA) filter. Soil will be transferred to a container under a controlled atmosphere.

Dust suppression and air monitoring will be conducted while the vacuum truck is stripping soil and during transfer operations.

The Scope of Work is outlined in Section 1.0 of this Work Plan. The Sampling and Analysis Plan is Section 2.0. Significant Deliverables for this project are this Work Plan, a Health and Safety Plan, a Project Specification, a Draft Report, and a Final Report.

## **1.0 INTRODUCTION**

Environmental Management Resources, Inc. (EMR) has prepared this Work Plan for The Burlington Northern Santa Fe Railway Company (BNSF) to remove visible hydrated biotite from the surface at the BNSF railyard in Libby, Montana, herein referred to as the Site. The Project Specification prepared by EMR in July 2002 and revised in October 2002 should be referenced for information and requirements specific to this Final Remedial Action Plan (FRAP).

Revisions to this FRAP are based on EPA comments dated October 3, 2002 and an October 9, 2002 pre-construction meeting of key project personnel. USEPA representatives were in attendance to provide guidance, as requested.

All work of this FRAP is to be completed by the end of December 2002, weather permitting.

The Scope of Work for this project is divided into four tasks.

Task 1 – Mobilize, setup, and demobilize.

Task 2 – Remove, transfer, containerize and dispose of surface soils containing visible hydrated biotite.

Task 3 – Complete air monitoring during surface soil removal and containerizing.

Task 4 – Complete soil sampling to evaluate the effectiveness of the FRAP

### **1.1 SITE MOBILIZATION AND DEMOBILIZATION**

#### **1.1.1 Surveying/Staking**

In October 2001, EMR completed a map of visible hydrated biotite at the Libby Railyard. Areas with visible hydrated biotite are shown on Figures 1 and 2. A grid system was established, and boundaries of visible hydrated biotite were staked with metal stakes. This grid system will be utilized to provide the information necessary to remove the previously identified surface soils.

BNSF intends to remove visible hydrated biotite. Following removal of visible hydrated biotite, confirmation soil samples will be collected from the bottom of the removal area per Section 2.3 of this Work Plan and submitted for analysis of Libby Amphibole (LA) asbestos (tremolite/actinolite series) by PLM (method 9002, Issue 2). Samples will be sent to EMSL Laboratories via CDM Federal Programs Corporation.

### 1.1.2 Mobilization and Set Up

Prior to mobilization, United States Department of Transportation (USDOT) inspections of the vacuum truck integrity will be completed and documented.

The site will contain an Exclusion Zone (EZ) and Contamination Reduction Zone (CRZ). The EZ is the area where clean-up is taking place and following cleaning these areas are also considered to be EZ's until soil sampling results do not detect Libby amphibole. The CRZ includes the personal decontamination trailer and equipment decontamination facilities. The EZ will be demarcated with signage and/or asbestos-caution tape and yellow or white traffic cones. If signage is used, the following language will be on the signs:

**"DANGER ASBESTOS**

**CANCER AND LUNG DISEASE HAZARD**

**AUTHORIZED PERSONNEL ONLY**

**RESPIRATORS AND PROTECTION CLOTHING ARE REQUIRED IN THIS  
AREA"**

The EZ is also the regulated area where soil removal activities occur. Employees must be in Level C personnel protective equipment (PPE) inside the EZ.

A contamination reduction zone (CRZ) will be established outside of the EZ. Since clean-up will be from South to North this zone will consist of the area between the EZ and decontamination facilities. A linear corridor of traffic cones from the EZ to the decontamination facilities will be established for personnel to go between the EZ and decontamination facilities. The northern boundary of the CRZ will be the property boundary. The CRZ will contain the personnel three-stage decontamination trailer equipment room (dirty), shower, and clean room). The personnel decontamination facilities will be located east of the highway overpass and scale house on the north side of the tracks. Personal decontamination procedures are outlined in Section 2.1.1 of the Health and Safety Plan (HASP).

Within the CRZ will be the soil transfer and disposal vessel staging area. This area will be set up to the east of the personnel decontamination facilities on the north side of the tracks.

The project site (or clean zone) outside of the CRZ consists of the rest of the BNSF right-of-way and requires Level D PPE.

An activity hazard analysis will be conducted prior to the start of work. A health and safety briefing discussing the findings of the activity hazard analysis will then be



conducted. All work will be conducted in accordance with the Site Health and Safety Plan.

### **1.1.3 Demobilization**

After the visible hydrated biotite and surface soils are removed from the Site, the equipment will be decontaminated as described in Section 2.1.2 of the HASP. The EMR representative for BNSF will verify that equipment is cleaned. The equipment decontamination pad will be located east of the highway overpass and west of the scale house on the north side of the tracks (Figure 1).

## **1.2 SITE PREPARATION**

### **1.2.1 Utility Location**

EMR's subcontractor will schedule and perform a utility locate through the Montana One Call system prior to the commencement of the work in order to determine if any utilities will need to be addressed during removal activities. EMR will conduct a BNSF utility locate using their "Call Before You Dig" telephone number prior to removal.

### **1.2.2 Asbestos Notification**

EMR's subcontractor will conduct all necessary asbestos notifications and secure any permits required from local, state, and federal agencies.

### **1.2.3 Storage Area Mobilization**

Necessary signage will be posted on the Site. Thirty cubic yard dumpsters lined with two layers of 6 mil poly will be staged in the area east of the highway overpass and east of the scale house. See Section 1.3.2 for additional details concerning soil transfer and staging.

## **1.3 REMOVE SURFACE SOIL AND CONTAINERIZE**

Areas with visible hydrated biotite are shown on Figures 1 and 2.

### **1.3.1 Surface Soil Removal**

EMR will direct a vacuum truck equipped with a High Efficiency Particulate Air (HEPA) filter to the areas with visible hydrated biotite. The vacuum truck operator will check the integrity of the hose before the start of work, at the beginning of each shift and after breaks. If the hose contains rips, tears, holes, or any other imperfections that will inhibit the effectiveness of the vacuum unit, it will be repaired or replaced.

The vacuum truck will effectively strip the top one or two inches of soil; and a one-half inch screen will be used to prevent the collection of gravel or cobbles. A worker will continuously maintain the hose effectiveness by knocking off attached gravel and cobbles. The vacuum system will not be powered down to remove gravel and cobbles.

The induced vacuum will also remove fines between gravel matrix to further depths up to approximately 1 foot. EMR will be present on site for the duration of the project to oversee the set up, dust suppression, and soil removal. There will be a certified Montana asbestos supervisor on-site who has completed the railroad contractor safety-training course on-line at [www.contractororientation.com](http://www.contractororientation.com) and be accustomed to railway operations to oversee the crew. All site personnel are required to complete the railroad contractor safety training course on-line at [www.contractororientation.com](http://www.contractororientation.com). Additionally, a Certified Industrial Hygienist (CIH) will be on-site initially to oversee the project.

The EMR Site Superintendent will oversee the work and the crew and complete the Daily Soil Removal Report and the Daily Safety Report. Based on historic wind direction data for Libby, Montana, work will start at the location farthest downwind and progress upwind. This corresponds to an expected start at the east (SE) end of the yard as the tracks roughly trend SE-NW. In addition, a wind sock will be utilized at each vacuum truck location to evaluate wind direction such that perimeter area sampling will have the correct upwind and downwind locations. GPS readings and the grid established in October 2001 will be used to determine the location of the soil removal and this information will be recorded on the Daily Soil Removal Report.

On Tuesdays and Thursdays between the hours of 10:00 am and 2:00 pm mountain time, the Libby Local train must use one pair of tracks BNSF railyard. Based on this requirement, and the October 9, 2002, site walkthrough with key project personnel, the vacuum removal will be conducted under the following plan:

Tracks 1 and 2 will be cleaned up first. Based on expected wind direction, work will progress east to west down tracks 1 and 2. The EZ will move from east to west along these tracks. Following removal of visible hydrated biotite on the west end of Tracks 1 and 2, the work will resume at the east end of the yard where Tracks 3 and 4 will undergo vacuum removal of visible hydrated biotite (Figures 1 and 2).

After vacuuming visible hydrated biotite inside the first EZ and soil transfer at the soil staging area, the 2<sup>nd</sup> EZ will be setup. Following receipt of confirmation soil sample results indicating no detectable Libby amphibole, these traffic cones around the respective EZ can be removed. The third, fourth, fifth EZs etc. will be set up following the 2<sup>nd</sup> EZ in similar fashion.

The south extent of the contamination reduction zone (CRZ) boundary will shift from south to north after completion of Tracks 1 and 2. When work commences on Tracks 3 and 4, the CRZ will be situated parallel and north of Track 4 (Figures 1 and 2).

The one limited area of visible hydrated biotite located on a switching track leading to Stimson Lumber Company will be vacuumed at the completion of the rest of the yard (southeast corner portion of Figure 1).

All visible hydrated biotite will be removed to the extent where it is determined that additional removal might undermine rail and ties (6-inches to 1 foot depth). If visible

biotite is present at or below this depth and cannot be removed by vacuum truck, then a description and location of the material will be noted on the Daily Soil Removal Report.

Dust suppression procedures are outlined in Section 2.2 of the HASP.

### **1.3.2 Transfer of Soil**

Soil transfer and disposal container staging will occur on the north side of BNSF tracks and east of the highway overpass and the scale house.

The following procedures were agreed on during the October 9, 2002 pre-construction meeting:

The soil will be augered from the vacuum trucks inside a vacuum hose into a 30 cubic yard steel dumpster lined with 6 mil plastic sheeting; it will not be blown into a container for disposal as was previously thought. Therefore, the positive pressure situation that was anticipated will not occur and the enclosure for soil transfer is not needed.

Instead of an enclosure, the dumpster lining will extend outside and overlap the sides of the dumpster in a manner so that these flaps can be sealed for transfer and disposal. An additional sheet of plastic will be secured to the liner plastic on the edges of the dumpster providing a roof over the lined dumpster. The vacuum truck hose will be put through an opening cut in the "roof" and the material will be augered into the dumpster.

The contractor will install a HEPA-filtered exhaust machine to remove air from the dumpster during soil transfer. The dumpster will not be under negative pressure as is typical for the industry (-0.2 inches of water column) rather the exhaust will be used to ensure a positive pressure does not develop from the transfer and to filter any particulate that is generated during the transfer process. The air filtration units have a variable rate of exhaust and the rate of exhaust will be adjusted so that the air inside the box is removed, but not so great that the plastic lining is damaged or pulls away from the interior of the dumpster.

The soil will be wetted as it is collected. Additionally, the contractor will wet the soil in the truck prior to transfer and it will be wetted as needed as the soil passes through a flexible hose into the dumpster.

The dumpsters will be parked on the Contamination Control Line so that the vacuum trucks can transfer their soil while inside the CRZ and the truck hauling the soil can remove the dumpster without entering the CRZ.

Air samples will be collected initially to study any potential airborne asbestos fiber concentrations generated inside the dumpster and outside the dumpster barriers. If concentrations less than 0.01 f/cc are detected inside and outside the dumpster barrier, the air filtration may be eliminated. However, air filtration will not be eliminated without reviewing the sampling data with the EPA on-site representatives and arriving at a mutual agreement regarding removal of the air filtration machines.

Final disposition of soil will be to a newly constructed landfill cell operated by Lincoln County. Containers will be marked for transportation with a transportation Class 9 placard (see Project Specification Section 01013, Part D, Number 10) indicating asbestos containing material.

#### **1.4 FINAL SITE RESTORATION**

Final Site Restoration will be accomplished by BNSF and will consist of placement of fresh railroad ballast material over the removal areas, and grading as necessary.

#### **1.5 REPORTING AND COORDINATING ACTIVITIES**

Progress reports will be submitted to USEPA weekly. The report will follow a standard format that consists of the following topics:

Progress made during reporting period;

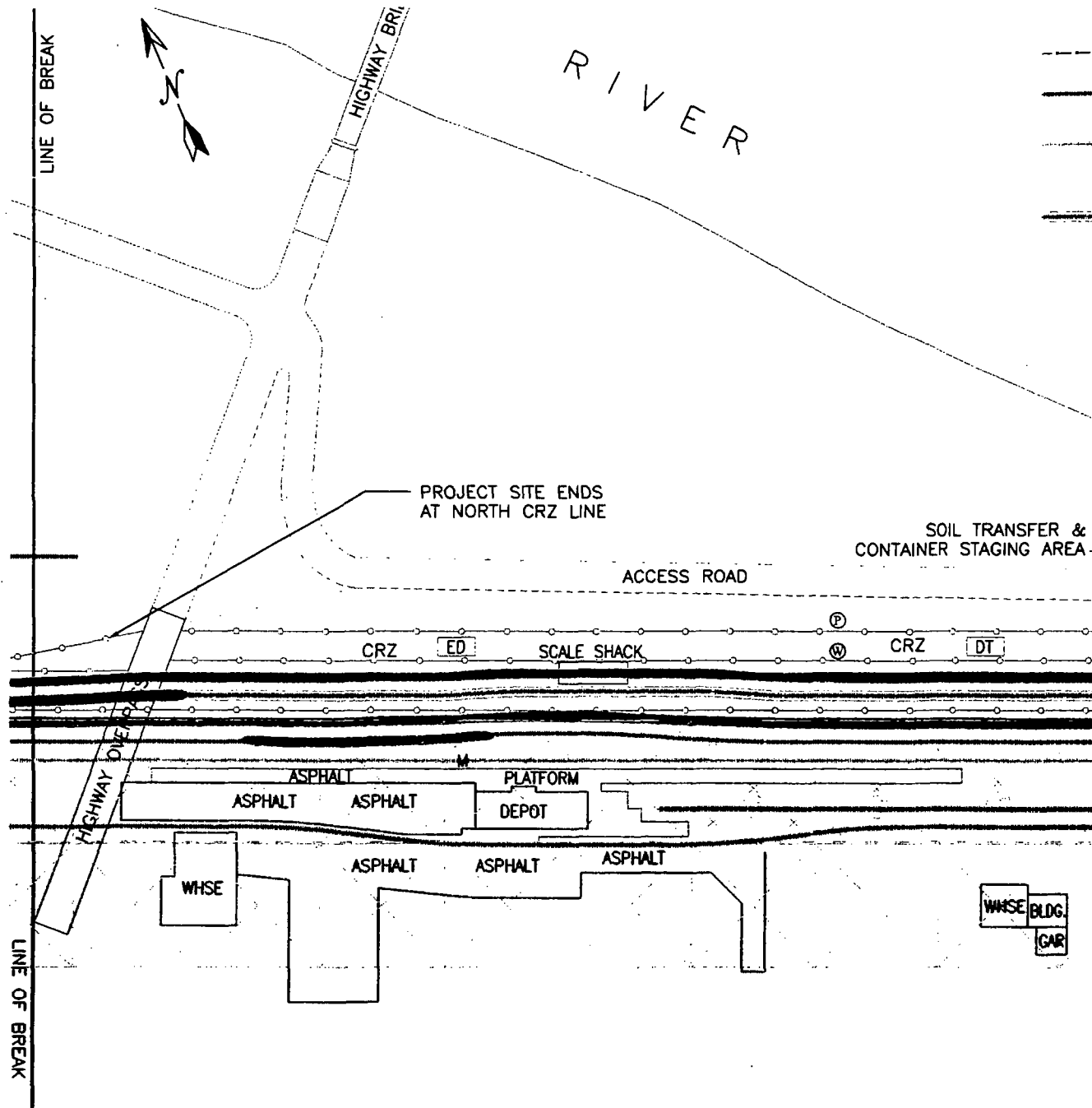
Problem areas and resolved/recommended solutions;

Deliverables submitted;

Activities planned for the next reporting period;

Key personnel changes, if any; and

Sampling/lab activities.

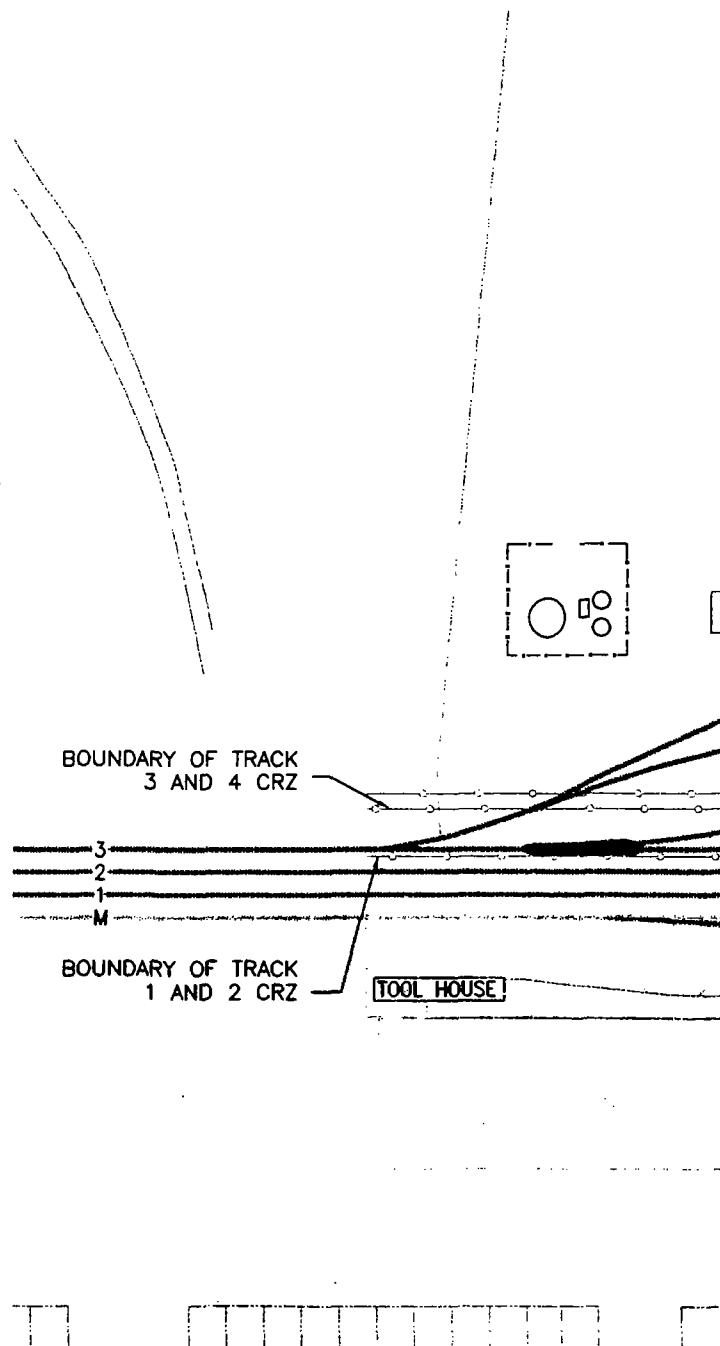


EAST AREA  
FIELD SAMPLING PLAN/  
MAP OF VISIBLE BIOTITE  
BNSF RAIL YARD  
LIBBY, MT.

0  
APPROXIMATE

**LEGEND:**

- FENCE
- 1— RAILROAD TRACKS WITH ASSIGNED NUMBER
- M— MAIN LINE RAILROAD TRACKS  
(3-4" DIAMETER QUARTZITE  
BALLAST AT LEAST 1-FOOT DEEP)
- PARKED TRAIN AT TIME  
OF INSPECTION
- VISIBLE BIOTITE MARKED WITH RED  
SURVEYOR'S WHISKER
- NW NE SAMPLING GRID (100'x100')  
C WITH GRID NUMBER AND GEOGRAPHIC  
SW SE REGIONS CORRESPONDING TO SAMPLE ID'S  
(EX. 2-C, 2-NW, 2-NE, 2-SW, 2-SE)
- GRID LOCATION REMOVED



WEST AREA  
FIELD SAMPLING PLAN/  
MAP OF VISIBLE BIOTITE  
BNSF RAIL YARD  
LIBBY, MT.

0  
APPROXIMATE

## 2.0 SAMPLING AND ANALYSIS PLAN

### 2.1 SAMPLE CUSTODY, DOCUMENTATION, PACKAGING, AND SHIPPING

Sample custody includes the identifying, labeling, packaging, and transporting of samples collected during this investigation. The chain-of-custody record is used as physical evidence of sample custody and control, and provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. Each sample will be identified by a unique code. Sample details will be noted in the sampling log sheets and field log books.

### 2.2 AIR MONITORING

Personal air samples will be collected inside the EZ and will be collected with a low volume battery pump for each person sampled. The samples will consist of a 30 minute excursion sample and sampling representative of full shift exposure. Samples will be analyzed using the NIOSH 7400 method. The action level for which corrective action will take place inside the EZ is 0.1 f/cc. This corresponds to the OSHA permissible exposure limit (PEL) criteria for work in an environment with no respiratory protection.

On the first full-day of soil removal the following samples are anticipated in the EZ from the breathing zone of the workers:

Personnel	Type of Sample	Number of Samples	Analysis	Total Number of Samples
Two Persons Performing Vacuuming	Representative of full-shift exposure	2 per person	PCM and 50% TEM	4 PCM, 2 TEM
	Excursion	1 per person	PCM and 50% TEM	2 PCM, 1 TEM
One Vacuum Truck Driver	Representative of full-shift exposure	2	PCM and 50% TEM	2 PCM, 1 TEM
	Excursion	1	PCM and TEM	1 PCM, 1 TEM
Total Samples for the First Day				9 PCM, 3 TEM

Subsequent days of site work we anticipated the following breathing zone samples will be collected from Exclusion Zone workers:

Description of Exposure	Description of Sample Types	Number of Samples	Analysis	Total Number of Samples
Two Persons Performing Vacuuming	Representative of full-shift exposure	1 per person	PCM and 50% TEM	2 PCM, 1 TEM
	Excursion	1 per person	PCM	2 PCM
One Vacuum Truck Driver	Representative of full-shift exposure	1	PCM and 50% TEM	2 PCM and 1 TEM every second day
	Excursion	1	PCM	1 PCM
Daily Breathing Zone Samples (After the First Day)				7 PCM, 1.5 TEM

Five background ambient air samples will be collected roughly equidistant across the length of the yard the day before the scheduled start of the project. The pumps used for the project will be A.P. Buck Basic-12 battery-operated high volume pumps. These pumps have a capability to pull approximately 6 liters per minute over a 10-hour time period.

Ambient air samples during the removal action will be collected at five perimeter-monitoring sites per vacuum truck. Should vacuum trucks operate side-by-side along two adjacent tracks, then only one set of 5 perimeter air monitoring sites will be utilized.

Air samples will be collected daily at the perimeter of the each Exclusion Zone. Three sites will be located down wind of the EZ; two sites will be located up wind of the EZ. The samples will draw a minimum of 1,200 liters of air to achieve the desired minimum detection limits.

A weather station located on the exterior of the BNSF Section House building in the southwest corner of the yard will be checked twice daily with wind speed and wind direction logged. A windsock will be used to evaluate wind direction daily to determine location of upwind and downwind samples. Based on historical wind direction data for Libby, Montana, wind is to the south. Additional perimeter locations will be added during the course of the project if a sustained shift in wind direction occurs after the first five sampling sites have been established. The actual locations of perimeter air samples will be selected in the field and surveyed using a GPS instrument and indicated on the



Site map. Ambient air samples will be submitted to either Clayton Laboratories of Atlanta Georgia or EMSL Laboratories for analysis by Transmission Electron Microscopy (TEM) by the NIOSH 7402 method.

In addition to the air sampling sites around the perimeter exclusion zones, air monitoring sampling will be conducted on the north boundary of the project site, east of the scale shack to address several residences located beyond the north access road boundaries. Two air sampling stations will be established between the soil transfer area and the residences to the north. Sampling of these stations will include periods of soil transfer, at a minimum. These air samples will also be submitted to either Clayton Laboratories or EMSL Laboratories and TEM analyzed by NIOSH 7402 method.

## 2.3 SYSTEMATIC SOIL SAMPLING

As is shown on the Figures in Section 1.0, visible hydrated biotite is present along portions of the rail lines. Following the removal action, discrete soil samples will be collected at 50-foot intervals along the rail lines and a portion of four such samples will be composited (ie. One composite sample per 200 feet of track length) and sent to EMSL laboratories for analysis. Samples will be collected at a depth of 6-inches below grade. At each sample location, a metal nail with yellow plastic flagging will be driven into the ground. Soil samples will be collected with a stainless steel trowel. Samples will be placed in one quart sized recloseable plastic freezer bags. Discrete samples will be submitted to the laboratory and held pending results of the composite samples. Discrete samples will be analyzed if the corresponding composite sample is positive for asbestos (Libby amphibole detected).

At the end of the project but prior to demobilization of vacuum truck equipment, a 100 foot spacing grid system will be surveyed in and the sampling will be performed in similar fashion to our October 2001 investigation. This will consist of collecting 5 discrete soil samples within each grid (NE, NW, SE, SW and Center) from a depth of 6-inches, saving a portion of each discrete sample to create a composite, and then shipping the discrete and composite samples to the laboratory. Upon receipt at the laboratory, the discrete samples of one grid will be held pending analysis of the composite sample from that grid. Should any detectable Libby amphibole (tremolite/actinolite series) by the PLM method 9002, Issue 2 be observed in composite samples, the discrete samples will be ~~run~~ analyzed to determine which discrete samples within the grid show detectable concentrations of Libby amphibole.

These areas would be re-vacuumed in a 25 foot radius around the sample locations with detectable results, excluding grids sampled previously without detecting Libby amphibole. New confirmatory samples will be collected to a depth of 1 foot or to a lesser depth considered to maintain the integrity of rail and ties. If these new confirmatory samples contain detectable Libby amphibole, an

addendum to the work plan will be prepared to address the disposition of these soils. Each sample point will be located by GPS. An AutoCAD® map of the main line, associated tracks, buildings and roads will be constructed to scale, and the sample locations will be shown on the map.

The SOPs that are specific to surface soil sampling were developed from the USEPA 540-R-97-028 document entitled *Superfund Method for the Determination of Releasable Asbestos in Soils and Bulk Materials*, which is Appendix 15 of the Quality Analysis and Program Plan (QAPP) for the USEPA Libby Mine project (a copy is available at <http://www.epa.gov/unix0008/superfund/libby/libbyqap.html>). The following SOPs will be used for the soil sampling:

- Surface soil sampling log (Appendix 8 to the QAPP);
- Surface soil sampling (Appendix 3, Section 5.2.3 to the QAPP);
- Photo documentation of sampling (Appendix 6 to the QAPP).

Sample analysis will be by others. Sample preparation by the laboratory will follow USEPA Region 8 standards for homogenizing surface soil samples (Appendix 13 of QAPP). Samples will be analyzed using a combined PLM/TEM analytical method; the coarse fraction of each sample will be analyzed using PLM methods. The fine fraction of each sample will be analyzed using TEM methods.

## **2.4 SOIL CHARACTERIZATION SAMPLING**

Required soil characterization samples will be collected and analyzed for requested parameters, and soils will be profiled for disposal.

## **2.5 OPERATION AND MAINTENANCE ACTIVITIES**

All visible hydrated biotite will be removed. Assuming all final grid soil confirmation samples show no detectable Libby amphibole, and for the purposes of this final remedial action plan (FRAP), no additional operation and maintenance activities are anticipated at this time.

## **2.6 ADDITIONAL REMOVALS ACTION WORK PLAN**

All visible hydrated biotite will be removed. Should any detectable Libby amphibole be detected in soil samples collected at a depth below which additional removal would potentially undermine ties and rail, an addendum to the work plan will be prepared that will address any remaining soils containing Libby amphibole.